

U.S. Serial No. 10/009,415

"High-Pass Branch of a Frequency Separating Filter for ADSL Systems"

Filed: 10 December 2001

PRELIMINARY AMENDMENT

Version with markings to show changes made

1. (Amended) A [F]requency separating filter having a deep-pass branch [(8)] for low frequency signals, particularly of analog communication systems, and a high-pass branch [(7)] for high frequency signals of digital communication systems, with multiple inductive components [(11, 14)] with magnetic cores,
[characterized in that] wherein
the high-pass branch [(7)] comprises at least one component [(11, 14)] with a magnetic core made of an amorphous or nanocrystalline alloy.

2. (Amended) The [F]requency separating filter according to claim 1,
[characterized in that] wherein
the alloy has the composition $\text{Co}_a(\text{Fe}_{1-c}\text{Mn}_c)_b\text{Ni}_d\text{M}_e\text{Si}_x\text{B}_y\text{C}_z$, with M indicating one or more elements from the group Nb, Mo, Ta, Cr, W, Ge, and P and $a+b+d+e+x+y+z = 100$, with

Co: $a = 40 - 82$ at%,

Fe+Mn: $b = 3 - 10$ at%,

Mn/Fe: $c = 0 - 1$,

Ni: $d = 0 - 30$ at%,

M: $e = 0 - 5$ at%,

Si: $x = 0 - 17$ at%,

B: $y = 8 - 26$ at%,

C: $z = 0 - 3$ at%,

$15 < e+x+y+z < 30$.

3. (Amended) The [F]requency separating filter according to claim 2,

[characterized in that] wherein

the following relationships apply:

Co: $a = 50 - 82$ at%,

Fe+Mn: $b = 3 - 10$ at%,

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Mn/Fe: $c = 0 - 0.5$,

Ni: $d = 0 - 20$ at%,

M: $e = 0 - 3$ at%,

Si: $x = 1 - 17$ at%,

B: $y = 8 - 20$ at%,

C: $z = 0 - 3$ at%,

with $18 < e+x+y+z < 25$.

4. (Amended) The [F]requency separating filter according to claim 1,
[characterized in that] wherein

the alloy has the composition $Fe_aCu_cM_fSi_dB_e$, with M indicating an element from the group Nb, W, Ta, Zr, Hf, Ti, Mo, or a combination of these and $a + c + f + d + e = 100\%$, with

Fe: $a = 100\% - c - f - d - e$,

Cu: $c = 0.5 - 2$ at%,

M: $f = 1 - 5$ at%,

Si: $d = 6.5 - 18$ at%,

B: $e = 5 - 14$ at%,

with $d + e > 18$ at%.

5. (Amended) The [F]requency separating filter according to claim 4,
[characterized in that] wherein

the following relationships apply:

Cu: $c = 0.8 - 1.2$ at%,

M: $f = 2 - 3$ at%,

Si: $d = 14 - 17$ at%,

B: $e = 5 - 14$ at%,

with $d + e = 22 - 24$ at%.

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6. (Amended) The [F]requency separating filter according to claim 1,
[characterized in that] wherein

the alloy has the composition $\text{Fe}_x\text{Zr}_y\text{Nb}_z\text{B}_v\text{Cu}_w$, with $x + y + z + v + w = 100$ at%, with

Fe: $x = 100 \text{ at\%} - y - z - v - w$,

Zr: $y = 2 - 5 \text{ at\%}$,

Nb: $z = 2 - 5 \text{ at\%}$,

B: $v = 5 - 9 \text{ at\%}$,

Cu: $w = 0.5 - 1.5 \text{ at\%}$,

with $y + z > 5 \text{ at\%}$ and $y + z + v > 11 \text{ at\%}$.

7. (Amended) The [F]requency separating filter according to claim 6,
[characterized in that] wherein
the following relationships apply:

Fe: $x = 83 - 86 \text{ at\%}$,

Zr: $y = 3 - 4 \text{ at\%}$,

Nb: $z = 3 - 4 \text{ at\%}$,

B: $v = 5 - 9 \text{ at\%}$,

Cu: $w = 1 \text{ at\%}$,

with $y + z = 6 - 7 \text{ at\%}$,

and $y + z + v > 12 - 16 \text{ at\%}$.

8. (Amended) The [F]requency separating filter according to claim 1,
[characterized in that] wherein

the alloy has the composition $\text{Fe}_x\text{M}_y\text{B}_z\text{Cu}_w$, with M indicating an element from the group Zr, Hf, Nb and $x + y + z + w = 100 \text{ at\%}$, with

Fe: $x = 100 \text{ at\%} - y - z - w$,

M: $y = 6 - 8 \text{ at\%}$,

B: $z = 3 - 9 \text{ at\%}$,

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Cu: $w = 0 - 1.5$ at%.

9. (Amended) The [F]requency separating filter according to claim 8,

[characterized in that] wherein

the following relationships apply:

Fe: $x = 83 - 91$ at%,

M: $y = 7$ at%,

B: $z = 3 - 9$ at%,

Cu: $w = 0 - 1.5$ at%.

10. (Amended) The [F]requency separating filter according to claim 1,

[characterized in that] wherein

the alloy has the composition $(Fe_{0.98}Co_{0.02})_{90-x}Zr_xB_{2+x}Cu_1$, with $x = 0 - 3$, with the residual alloy component Co able to be replaced by Ni with appropriate equalization.

11. (Amended) The [F]requency separating filter according to claim 10,

[characterized in that] wherein

$x = 0$.

12. (Amended) The [F]requency separating filter according to claim 4,

[characterized in that] wherein

the alloy also has an element which is Co or Ni.

13. (Amended) The [F]requency separating filter according to claim 12,

[characterized in that] wherein

the alloy also has Co_b with

Co: $b = 0 - 15$ at%.

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14. (Amended) The [F]requency separating filter according to claim 5,
[characterized in that] wherein
the alloy also has Co_b with
Co: b = 0 – 0.5 at%.